Decibel Scale



READ Science

The loudness of sound is measured in decibels (dB). Most sounds fall between zero and 100 on the decibel scale making it a very convenient scale to understand and use. Each increase of 20 decibels (dB) for a sound will be about twice as loud to your ears. Use the following table to help you answer the questions.

10-15 dB	A quiet whisper 3 feet away
30-40 dB	Background noise in a house
65 dB	Ordinary conversation 3 feet away
70 dB	City traffic
90 dB	A jackhammer cutting up the street 10 feet away
100 dB	Listening to headphones at maximum volume
110 dB	Front row at a rock concert
120 dB	The threshold of physical pain from loudness

EXAMPLE

How many decibels would a sound have if its loudness was twice that of city traffic?

Given	Solution
From the table, the loudness of city traffic is 70 dB.	City traffic = 70 dB
Looking for	Adding 20 dB doubles the loudness.
The decibel reading for a sound twice as loud as traffic.	70 dB + 20 dB = 90 dB
Relationship	90 dB is twice as loud as city traffic.
For every 20 dB increase, a sound is twice as loud.	

PRACTICE

- 1. How many times louder than a jackhammer does the front row at a rock concert sound?
- 2. How many decibels would you hear in a room that sounds twice as loud as an average (35 dB) house?
- 3. You have your headphones turned all the way up.
 - a. If you want them to sound half as loud, to what decibel level must the music be set?
 - b. If you want them to sound 1/4 as loud, to what decibel level must the music be set?
- 4. How many times louder than city traffic does the front row at a rock concert sound?
- 5. When you whisper, you produce a 10-dB sound.
 - a. When you speak quietly, your voice sounds twice as loud as a whisper. How many decibels is this?
 - b. When you speak normally, your voice sounds 4 times as loud as a whisper. How many decibels is this?
 - c. When you yell, your voice sounds 8 times as loud as a whisper. How many decibels is this?

Date:



Twice as loud. 2. 55 dB Answers are: 80 dB a. 60 dB b.

Four times louder 4 Answers are: a. 30 dB b. 50 dB c. 70 dB